

## A SYSTEMATIC STUDY OF THE ANT GENUS *PROCERATIUM* ROGER FROM CHINA<sup>\*</sup> (HYMENOPTERA: FORMICIDAE)

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**Abstract** Four species of the ant genus *Proceratium* Roger from China are recorded in this paper: *P. itoi* (Forel) from Zhejiang, Taiwan and Hunan Provinces, *P. zhaoi* Xu, sp. nov. from Yunnan Province, *P. japonicum* Santschi from Taiwan Province and *P. longigaster* Karavaiev from Yunnan Province. *P. longigaster* Karavaiev is a new record species to China, a description based on the Chinese specimen is provided for the species. A key to the 4 known Chinese species based on worker caste is presented.

**Key words** Hymenoptera, Formicidae, *Proceratium*, Systematics.

The ant genus *Proceratium* Roger is World wide in distribution. Brown (1958) and Lattke (1994) had revisionary studies on the genus respectively. Thirty species were recorded in the world (Bolton, 1995), among them 9 species were known in Southeast Asia. Terayama (1985) described the first Chinese species of the genus, *P. formosicola*, from Taiwan Province. Later, Onoyama (1991) considered *P. formosicola* Terayama as a junior synonym of *P. japonicum* Santschi. Terayama (1990) reported the distribution of *P. itoi* (Forel) in Taiwan Province. Wu *et al.* (1995) and Tang *et al.* (1995) reported the distribution of *P. itoi* (Forel) in mainland of China separately. In this study, a new species and a new record species from China are reported. Up to date, 4 species of the genus are known in China.

Standard measurements and indices are as defined in Bolton (1975): TL = Total length, HL = Head length, HW = Head width, CI = Cephalic index, SL = Scape length, SI = Scape index, PW = Pronotal width, AL = Alitrunk length, ED = Maximum diameter of eye, ML = Mandibular length, PL = Petiole length, DPW = Dorsal petiole width, PH = Petiole height. All measurements are expressed in mm.

The type specimens are deposited in The Insect Collection, Southwest Forestry College, Kunming, Yunnan Province, China.

### *Proceratium* Roger

*Proceratium* Roger, 1863. Berlin. Entomol. Zeitsch., 7: 171.

Type species: *Proceratium silaceum*, by monotypy.

### Key to species of *Proceratium* of China based on worker caste

1. Anterior margin of clypeus with a triangular projection in the middle. Petiolar node low and inclined backward ..... 2  
Anterior margin of clypeus almost straight, without a triangular projection in the middle. Petiolar node high and erect ..... 3
2. In full-face view occipital margin weakly convex. Frontal carina with laterally expended frontal lobe which partially covered the antennal socket. Mandible with 3 teeth. Subpetiolar process being a small prominent (Figs. 1-2) (China: Zhejiang, Taiwan and Hunan Provinces; Japan) ..... *P. itoi* (Forel)

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- In full-face view occipital margin straight. Frontal carina suberect, without laterally expended frontal lobe, antennal socket completely exposed. Mandible with 4 teeth. Subpetiolar process large and roughly rectangular, with a posteriorly pointed tooth (Figs. 3-10) (China: Yunnan Province) ..... *P. zhaoi* Xu, sp. nov.
3. Posterodorsal corner of propodeum bluntly angled, without tooth (Figs. 11-12) (China: Taiwan Province; Japan) ..... *P. japonicum* Santschi
- Posterodorsal corner of propodeum with a pair of small acute or blunt teeth (Figs. 13-17) (China: Yunnan Province; Vietnam) ..... *P. longigaster* Karavaiev

***Proceratium zhaoi* Xu, sp. nov.** (Figs. 3-10)

Holotype worker. TL 2.4, HL 0.62, HW 0.52, CI 84, SL 0.34, SI 65, PW 0.38, AL 0.70, ED 0.03, ML 0.30, PL 0.22, DPW 0.23, PH 0.28. Head roughly rectangular, slightly longer than broad and slightly narrowed forward. Occipital margin straight, occipital corners rounded. Lateral side weakly convex. Frontal carinae suberect, without laterally expended frontal lobes. Antennal sockets completely exposed. Anterior margin of clypeus with a triangular projection in the middle. Mandible with 4 teeth. Antenna stout, apex of scape reaching to 1/2 of the distance from antennal socket to occipital corner, segments 3-11 broader than long. Eye minute, with only 1 facet. In profile view dorsum of alitrunk complete and weakly convex, lowed down backward, without sutures. Posterodorsal corner of propodeum bluntly angled, without tooth, declivity depressed. Metapleural lobe rounded at apex. In profile view petiolar node thick, narrowed upward and inclined backward, anterior and dorsal faces weakly convex, anterodorsal corner higher than posterodorsal corner. Subpetiolar process large and roughly rectangular, with a posteriorly pointed tooth. In dorsal view petiolar node transverse and broader than long, narrowed forward. Mandibles finely and longitudinally striate. Head, alitrunk, petiole and gaster finely and densely punctured, relatively dim. Head, body and appendages with dense decumbent pubescence, but without hairs. Body in color yellowish brown.

Paratype workers. TL 2.0-2.5, HL 0.60-0.64, HW 0.52-0.56, CI 86-90, SL 0.32-0.34, SI 61-65, PW 0.34-0.38, AL 0.66-0.74, ED 0.02-0.03, ML 0.28-0.34, PL 0.20-0.24, DPW 0.22-0.26, PH 0.26-0.30 ( $n = 6$ ). As holotype, but subpetiolar process rectangular to triangular.

Paratype alate females. TL 3.0-3.3, HL 0.70-0.72, HW 0.60-0.64, CI 86-89, SL 0.36-0.38, SI 58-61, PW 0.48-0.50, AL 0.94-1.00, ED 0.12-0.14, ML 0.30-0.38, PL 0.24-0.32, DPW 0.26-0.30, PH 0.34-0.40 ( $n = 5$ ). As holotype worker but body much larger. Occipital margin slightly emarginate. Eyes large, with ocelli. Alitrunk massive and winged, dorsum weakly convex. Propodeum with a pair of blunt teeth. Subpetiolar process triangular. Body in color yellowish brown, eyes and ocellar area black.

Holotype worker, No. A97-2338, 1280 m, Papo Village, Meng'a Town, Menghai County, Yunnan Province, collected in a soil sample in deciduous broad-leaf forest, 10. IX. 1997. (XU Zheng-Hui). Paratypes 1 worker, with same data as holotype; 5 workers and 24 alate females, with same data as holotype but No. A97-2380, collected from a nest which containing 45 individuals in a soil sample.

The new species is close to *P. itoi* (Forel) (Figs. 1-2), but occipital margin straight, frontal carinae suberect and without laterally expended frontal lobes, mandible with 4 teeth, subpetiolar process large and roughly rectangular, body smaller.

This new species is named after Mr. ZHAO Qing-Shan (South Institute of Forest Plant Quarantine, Department of Forestry of China, Yiyang, Jiangxi Province) for his contribution in translation "The Fauna of British India Including Ceylon and Burma. Hymenoptera. Volume

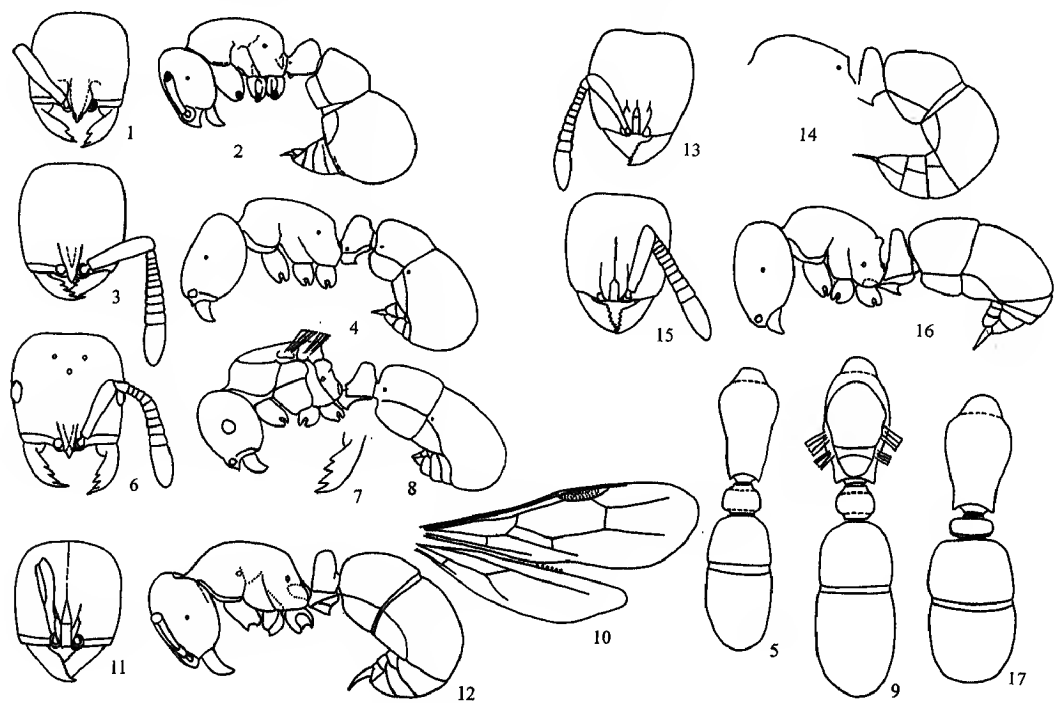
# II. Ants and Cuckoo-wasps" from English into Chinese for the Chinese readers.

## *Proceratium longigaster* Karavaiev (Figs. 13-17)

*Proceratium longigaster* Karavaiev, 1935: 59 (worker), Vietnam.

New record to China.

Karavaiev (1935) described this species in Germany with illustrations (Figs. 13-14). An English description based on the Chinese specimen is provided below. Worker (Figs. 15-17). TL 2.4, HL 0.64, HW 0.60, CI 94, SL 0.42, SI 70, PW 0.44, AL 0.76, ED 0.02, ML 0.34, PL 0.16, DPW 0.32, PH 0.42 ( $n = 1$ ). Head roughly square, slightly longer than broad and slightly narrowed forward. Occipital margin nearly straight, occipital corners rounded. Lateral sides weakly convex. Anterior 2/3 of head with a fine longitudinal central dorsal carina. Frontal lobes narrow. Anterior margin of clypeus nearly straight in the middle, without a central projection. Mandible with 7 minute blunt teeth. Apex of scape reaching to 3/4 of the distance from antennal socket to occipital corner. Eye with 1 facet. In profile view dorsum of alitrunk complete and weakly convex, without sutures, lowed down backward. Propodeum with a pair of small blunt teeth, declivity depressed vertically. Metapleural lobe small and blunt at apex. In profile view petiolar node high and erect, narrowed upward, anterior face straight, posterior face weakly depressed, dorsal face narrow and convex. Subpetiolar process triangular, like a sawtooth, posteroventral angle acute. In dorsal view petiolar node rectangular and transverse. Mandibles sparsely punctured, interface shining. Head, alitrunk, petiole and gaster finely and closely punctured.



Figs. 1-17 *Proceratium* workers and females

1-2. *P. itoi* (Forel), worker 3-5. *P. zhaoi* Xu, sp. nov., worker 6-10. *P. zhaoi* Xu, sp. nov., alate female 11-12. *P. japonicum* Santschi (= *P. formicicola* Terayama), worker 13-17. *P. longigaster* Karavaiev, worker 1, 3, 6, 11, 13, 15. head in full-face view 2, 4, 8, 12, 14, 16. body in profile view 5, 9, 17. body in dorsal view 7. mandible in dorsal view 10. front and hind wings in dorsal view 1-2. after Terayama (1990) 11-12. after Terayama (1985) 13-14. after Karavaiev (1935), Pilosity omitted

tured and mat. Head, body and appendages with sparse suberect hairs and dense decumbent pubescence. Body in color brown, legs and apical segment of antenna yellowish brown.

The Chinese specimen is well conformable to the description of *P. longigaster* made by Karavaiev in 1935, the only differences are: occipital margin straight, mandibular teeth more distinct, propodeal teeth larger and blunt at apices.

Material examined. 1 worker, No. A97-2182, 1 525 m, Nangongshan, Mengla County, Yunnan Province, collected from a ground sample of monsoon evergreen broad-leaf forest, 18. VIII. 1997. (HE Yun-Feng).

Distribution. China (Yunnan Province); Vietnam.

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## 中国卷尾猛蚁属系统分类研究

(膜翅目: 蚁科)

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### 摘 要

记载中国卷尾猛蚁属 *Proceratium* Roger 4 种: 伊氏卷尾猛蚁 *P. itoi* (Forel) 分布于浙江、台湾和湖南, 赵氏卷尾猛蚁 *P. zhaoi* Xu, sp. nov. 新种分布于云南, 日本卷尾猛蚁 *P. japonicum* Santschi 分布于台湾, 长腹卷尾猛蚁 *P. longigaster* Karavaiev 分布于云南, 为中国新纪录种。文中编制了中国 4 种工蚁的分种检索表。

**关键词** 膜翅目, 蚁科, 卷尾猛蚁属, 系统分类。

**中图分类号** Q969.554.2